THE MODEL HEALTH SHOW

EPISODE 710

Obesity Vs. Genetics & How Ketones Impact Your Heart, Brain, & Metabolism

With Guest Dr. Latt Mansor

You are now listening to The Model Health Show with Shawn Stevenson. For more, visit themodelhealthshow.com.

SHAWN STEVENSON: You are now listening to The Model Health Show with Shawn Stevenson. For more, visit themodelhealthshow.com. Welcome to The Model Health show, this is fitness and nutrition expert Shawn Stevenson, and I'm so grateful for you tuning in with me today.

Is obesity caused by genetics? Now obviously genes play a component in all health outcomes, but is it the primary cause of our obesity epidemic? Also, what is fueling our metabolism, what's fueling our brain health our heart health? What's the preferential fuel used by ourselves to perform at our very best?

If we're talking about weight loss, if we're talking about performance and exercise, if we're talking about our heart beating, what is a preferential fuel that helps these processes to run without side effects? Because we know that abnormal amounts of blood glucose, consumed and then used to drive these processes can lead to a lot of downstream dysfunction.

High blood glucose is a major causative agent in diabetes, in pre-diabetes, in chronic conditions with cardiovascular dysfunction, heart attacks, strokes, Alzheimer's, obviously obesity. The list goes on and on.

So is there an alternative? Is there an alternative fuel to help to fuel our body to be its very best? These are just some of the things that we're covering today, and I think this episode is truly going to blow you away.

Now first things first, we always want to keep in mind that we want to build our health on a strong foundation. Nutrition. Because our nutrition is truly making all of our cells, all of our tissues, our organs, organ systems, this is all made from the food that we eat. So, we want to provide our bodies with the best possible building materials.

Also, movement, our genes expect us to move for healthy expression. Movement is a determinant of so many different health outcomes and processes in the body. Exercise is a primary means for increasing the absorption of our nutrients from our food. Also, elimination of metabolic waste products. Good food is one piece, but we cannot make the most of it without movement. Obviously, our sleep quality matters a tremendous amount as well.

But when it comes to adding in certain key nutrients for specific purposes, for example, what if we're dealing with inflammation? What if we have abnormal amounts of inflammation going on and we want to utilize something that has only positive benefits without side effects?

Like we might see with taking NSAIDs for example, non-steroidal anti-inflammatories, that are now well noted to cause pretty significant damage to our gut, to our gastrointestinal tract, to our stomach and to our immune system as well if utilized for too long.

What's something that we can use in that place to help to reduce our bodies levels of inflammation and have some other really remarkable benefits as well?

A study published in the European Journal of Nutrition uncovered that compounds in turmeric can down-regulate inflammatory cytokines and up regulate the activity of something called adiponectin, which is a primary satiety hormone in the human body as well as other satiety related hormone.

So, number one, helping to reduce inflammation in the body and helping our hunger and satiety hormones to become more regulated. These are just a couple of the powerful benefits of adding in proactively a turmeric supplement.

Also, turmeric has been found to improve insulin sensitivity, reduce blood fats and directly act upon our fat cells themselves. Plus, research published in the Journal of Ethnopharmacology points to Turmeric's potential in reducing the severity of both anxiety and depression.

Stop it, come on, there's too many incredible benefits to note here with something as time-tested and utilized by humans for centuries as turmeric. It's truly remarkable. And now again we have modern science to affirm these benefits.

But quality, as with anything, always matters when we're going for a turmeric supplement. For me and my family we're getting our turmeric supplement and these benefits for our cardiovascular, system our brain health, our metabolic health and more, from Paleovalley.

Their Turmeric Complex is not only all organic, but it also has really important food-based bio potentiators that help the turmeric and the resulting compounds in turmeric, like curcumin for example, to work far more effectively in the human body.

Now curcumin isn't the only compound that's found in turmeric. This is why curcumin-only supplements are generally not the way to go. If we're looking at an isolated thing of helping to reduce inflammation, yes, but there are other benefits found with the remarkable cascade of nutrients found in turmeric, like something called ar-turmerone.

Now, ar-turmerone has been found to increase the proliferation of our body's neural stem cells. So, we're talking about neurogenesis in the human brain, truly remarkable.

Again, check out the Turmeric Complex from Paleovalley right now. Go to paleovalley.com/model. You're going to get 15% off their Turmeric Complex and they're giving you 15% off store wide That's P-A-L-E-O-V-A-L-L-E-Y.com/model for 15% off their incredible Turmeric Complex.

I keep this on hand at all times at my house and as well as store-wide you're going to get 15% off from the good folks at Paleovalley. Again, go to paleovalley.com/model and now let's get to the Apple podcast review of the week.

ITUNES REVIEW: Another five-star review titled "Truth About Obesity" by Barbara Once More. "Thank you. Ever since I saw the 60 Minutes episode you so beautifully deconstructed, I've been hoping someone would take it apart and point out all the flaws and injustices. Thank you for doing a great job. Mad respect."

SHAWN STEVENSON: Thank you so much for that acknowledgement and sharing your voice over on Apple podcast. And that episode that you're referring to, The Truth About Obesity, by the way, if you happen to have missed that episode it is a must listen, it's a must listen or must watch. We're going to put that for you in the show notes.

Now here's something really cool, is that I was inspired to do that episode because of our special guest. Now, our special guest has a PhD in Physiology and Anatomy and Genetics from the University of Oxford, where his research focused on the metabolism of the type two diabetic heart in hypoxia.

He also holds a master's degree from Columbia University and a bachelor's degree from the University of Nottingham in biotechnology. He is a vast knowledge base and he's a world expert in physiology and metabolism and consults with elite sport, military, clinical and research organizations.

And he did a wonderful analysis of a recent 60 Minutes episode where they were touting the necessity of obesity related drugs, this new category of drugs that target GLP-1 in the body. So this is one of our major satiety hormones and operating really from the perspective in this 60 Minutes episode, that it is our genes that are causing our epidemics of obesity.

Our genes are the number one causative agent according to that episode. Again, this storied show, this long running show that has garnered a lot of trust, this is what they were propagating recently. And I did a breakdown of this, but again, it was inspired by our special guest.

Because his dictation of it was poignant and incredibly insightful and just really pointing out the potential flaws in putting all of our stock and our belief in the fact that it is our genes that are controlling our destiny. So, I'm really, really excited about this conversation with Dr. Latt Mansor. Check it out.

I have a paper here titled, Genetic Factors Are Not the Major Causes of Chronic Diseases. This was published in one of our most prestigious journals, PLOS One.

At the same time, one of the apparent leading researchers on obesity was just highlighted on a long running respected show, 60 Minutes, saying, "The number one cause of obesity is genetics." What's going on here?

DR. LATT MANSOR: I think that is absolutely untrue. I've made a video of it, and I've given my thoughts around why I think it's untrue because the data does not support that, right? And then I further evaluate why do they say that? Like what drives them to say that?

I think when people look at science these days, it's very important to look at what's driving people to do that research. What's the objective? And then why are they coming up with such conclusion? And from then you will find out how objective the science is and what the truth is behind the data.

And from that broadcast, they said it very subtly that the broadcast was sponsored by the company that made the drug that they were sort of marketing in that program, which is semaglutide, which helps people to lose weight.

And they also mentioned the two doctors that they interviewed that featured in the whole program were advisors to the same company that also sells the drug.

So, the problem I see here is the major conflict of interest, which puts them in a very precarious situation because they're getting paid to do this. And they are the more drugs that they sell, the company will profit from it and therefore they'll probably get more benefit from it.

So, if you are going to push for something that is so far from truth, at least have some substantial data to back it up. And most importantly, not only just declare your conflict of interest, but follow through with full transparency and full scientific integrity.

SHAWN STEVENSON: Yeah. It became a glorified infomercial, unfortunately again, a respected show. This is really speaking to in your video dictation of it was like, we have to be mindful of where the science is coming from because we can throw the label of science on anything, and really looking at how can we find some integrity here?

And the lacking piece was, okay, you're saying that the number one cause of obesity is genetics. How? Where's the proof? Because again, that paper that I just cited, disproved even not just with obesity, but Type 2 diabetes.

DR. LATT MANSOR: Chronic diseases. Yeah.

Chronic disease overall. Because of our recent innovations in genetic testing, what is really done is highlighted how few things are really kind of controlling what our genes are doing, right? When it comes to trying to like identify a gene that's causing a thing. And what we're doing is seeing how much the environment and our choices are affecting our genetic expression.

So, can you talk a little bit about that? What are the real causes of obesity?

DR. LATT MANSOR: I think when it comes to metabolism, so when you talk about obesity, when you talk about chronic diseases, we are talking about metabolic dysfunction. When I talk about metabolic dysfunction it's essentially your metabolism is not functioning the way that they should, right?

And metabolism is never a straight line. It's a interweb of very complicated pathways that interchange and always balance each other out. So, when you have a pathway that goes out of order, another pathway would get changed to compensate for that.

So, to say that just genetics is the cause and just you're born into it, one, you are taking away hope from people and it's like you just have to resort to drugs and that's it.

And even then, in the video, they said even if you're on this drug, you still have to maintain good nutrition and exercise. So, what's the point, right?

And the second point is when you have one dysfunctional metabolic pathway, most often than not, the compensatory mechanism will be able to adapt so that you're not yet in the red zone where you are chronically ill. So, you might not see the dysfunction in your glucose, you might not see dysfunction in insulin.

Over a long time when you're finally manifesting those diseases, that's when you realize a lot of these different pathways are now out of whack and can't compensate anymore. And that's why for me, the main cause of obesity, the main cause of chronic diseases, falls down to a lot to do with lifestyle choices and lifestyle decisions.

And I'm not saying that genetics have nothing to do with it, it's just not the number one cause of chronic disease or obesity. And I'm also saying that these drugs essentially, I'm not saying that they're useless, and I'm not saying that they're not helpful, they are but tools to help people achieve what they couldn't achieve otherwise.

So, if you've done everything you could in terms of changing your lifestyle, increasing your physical activity, eating healthily, manage your stress well, and your sleep well, and you still don't see results, maybe then turn to these different tools like bariatric surgery, semaglutide, right?

But to tell people that genetics is the main cause and therefore don't worry about the rest, just go straight to the drug. But then after that, you are dependent on it for the rest of your life and then you do your lifestyle changes on top of that. That's just unfair, in my opinion.

SHAWN STEVENSON: It's incredibly disempowering, which would be framed as the opposite. Like they were even showing one of the patients, like she's felt such a sense of relief when she was informed by one of these, again, perceived experts on obesity, that this is nothing to do with you.

The obesity circumstances you're experiencing this condition you're experiencing. It's not your fault. It has nothing to do with you. You couldn't have done anything about it. Now here's this drug and we're going to take care of you.

And unfortunately, even with this framing, and like you, I love this about you, you are just like, this is an option. However, we need to address these other pieces first.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: We don't just jump right to this thing. Because your body, as you mentioned, there's all these different interchangeable, intertwining pieces. And if you come in with a blunt instrument in the form of this medication that's GLP-1 one agonist, just targeting this one thing like a blunt instrument, what else is that going to impact? Because everything in your body's connected.

DR. LATT MANSOR: Exactly.

SHAWN STEVENSON: This is satiety hormone. And this is, has a lot to do... One of the, the common symptoms is that feeling of nausea. What do you think is going to happen if this is targeting something produced by your, by your gut really?

DR. LATT MANSOR: Yeah, as I said, everything is interconnected, interdependent. So, if you screw something up, your other systems may be affected. And that's why a lot of these people, they have to be on that drug for the rest of their lives because they have, they're now not able to rectify their metabolic pathways naturally.

And I'm not saying that it's easy, like I've got one comment, and I still remember this because I do care about what I tell people and how people feel, and one of the comment is saying that, "Oh, you look healthy. You never have to lose that much weight in your life. What do you know? Like, I've tried everything, and this is a lifesaver."

And I said, I've, even though I haven't been obese, I grew up overweight, I grew up in a family that has high obesity prevalence, and I always thought that was my ending. That was going to be my adult life. Because I didn't know better. Not until I learned about metabolism and of physiology and exercise and changing my lifestyle altogether, that drove me to become who I am today.

So, I'm not saying that it's easy, but you got to at least try that. And if you can't, like I said, you can always go back to this drug. It's going to be available for you. They're not going anywhere.

And I've got doctors who I interviewed who use this drug in conjunction with lifestyle changes and they have seen tremendous results. They use a multimodal approach, they use keto diet, they use fasting, they use exercise protocols together with semaglutide. And they saw an increase in insulin sensitivity.

So that's great, but don't market it as the one and only solution and miracle drug that will solve all of the chronic diseases' problems. Let's be real, right? I mean, that's why us scientists gets all these bad connotations 'cause all these vested interests and money and pharmaceuticals.

SHAWN STEVENSON: Yeah. It's getting interwoven today in even treatments for children, for childhood obesity is trying to get framed right now as part of standard of care, and putting kids, which you said it, lifetime. So, this isn't something you take for a month and then your headache goes away, or your obesity goes away.

This is something you need to stay on, and this is going to be like a farming and a repeat customer for this particular drug. And there's going to create obviously a dependency on this.

On your encouragement, before we even met or before we even talked and had this conversation, by seeing your video on this, and we'll put it in the show notes, it inspired me to go and look at like what are some of the side effects? And so, I looked up some data from the

Mayo Clinic and Ozempic is in the same category as well with these formulations targeting GLP-1.

And here's what's crazy. So, this is a direct quote, "Ozempic has been associated with an increased risk of thyroid cancer." Now according to their own drug data, which I'm just using Ozempic, "Ozempic has caused thyroid cancer in animals. It's unclear if this drug also increases thyroid cancer risk in humans."

Okay. Emphasis on "unclear". Now there's a black box warning on Ozempic from the FDA and it states that in rodents, Ozempic "causes dose dependent". This is the key part I wanted to talk to you about. Dose dependent in treatment duration dependent thyroid tumors.

Dose dependent. So, the longer you are taking treatment dependent, treatment duration dependent, the longer you're taking dose, how much you're taking, it's increasing that. But it's unclear if it's in humans, definitely tumors in rats, in the thyroid associated with your metabolism, but hey, it's going to be fine.

DR. LATT MANSOR: Yeah. Yeah. Those fine prints. Again, let's look at what you're treating here. Are you treating the symptom? Are you treating the root cause? You know what I mean? Are you treating the symptom at the expense of the increased risk of thyroid hormone, of thyroid cancer? Is that worth it? You tell me.

And that's why I like, when I first heard, first met you in person in the event last year where you read a section of your book and you talked a lot about the system and the nutrition system, the agricultural system and all that, just all tie in together.

How people behave, how people eat, how people act, how people live their lives. And that is what's causing. I mean, how much clearer can it be to identify that and then come up with a solution?

SHAWN STEVENSON: Now, the thing that was most intriguing about you and your work, even going from that video and just diving more into your universe is number one, you just mentioned a little bit of your background, with your family history and you essentially writing a new story. Because on the surface, on paper, you're going to carry these associated genes that are supposed to determine your destiny.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: But utilizing certain choices with your lifestyle, and unfortunately even lifestyle factors, I think gets a bad name. Even saying something like that. Because it just sounds like, "Oh, it's your lifestyle, “but this other stuff is far more powerful than that.

When you look at just the sheer amount of food that we're consuming, the tons, tons of food that we're consuming, versus these micrograms of certain medications.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: If we put that up against the amount of nutrients coming from food and/or additives and/or synthetic chemicals, like we're going to start to see an imbalance and then we swoosh in here and we try to treat these associated symptoms with a drug.

And again, I love that you talk about this, these drugs have their place, and we are, should be grateful that they're available. And let's get more focused on what we can do to take control of our own health, our own metabolism.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: And one of the things that you've been pioneering is really helping people to understand how our metabolism works and this alternative fuel system, that isn't really necessarily an alternative fuel system, it's a primary fuel system that we evolved to have, involving ketones.

So, can you start off by first sharing for people that don't know, from your professional experience in your education, what are ketones, number one, and how can they influence our metabolic health?

DR. LATT MANSOR: Great question. So first and foremost, ketones are super fuel that your body uses for energy. It's being preferred by the heart, the brain, and those have been shown very clearly in studies that the heart and the brain will take up ketones when they're available in your body, regardless of availability of other substrates. Meaning that glucose can be there, fats can be there, but it will take up ketones.

So, our bodies are evolved and designed to produce ketones and metabolize ketones. But the problem is the state at which our bodies have to be in, in order to produce and metabolize ketones is when you are very low on carb storage.

So, you need to be either fasting or on a ketogenic diet when you restrict your carb intake severely, in order for your body to send signals to your liver in order to break down fat and

produce ketones. So, the three main ketones bodies that our bodies produce are acetoacetate, acetone and beta-hydroxybutyrate, which I'll call BHB just to make it easier.

BHB is the form, the main form that our bodies use for transport as well as metabolism when it comes to keto metabolism. Now, a lot of people ask, why is it a super fuel?

It was designed in our body to really compensate when if you think about primal behavior of ancient human beings when they are hunting and when they don't have storage system to store foods. So, they have to go out and hunt whenever they're hungry, but then when they have a period of time when they have food, then they go through the recovery.

And when they are hungry and when they are depleted of carb storage, they have to be in a state where they're focused, but also having the energy needed to physically go out and hunt. This is where ketones comes in, because then you are also relying on ketones at that point because you don't have glucose to rely on.

So over time, about 20 years ago, DARPA from the military funded a study to look at what are the efficient fuels to help special command operators to go on long and demanding mission. And they sort of arrived at ketones.

So, whatever I talked about earlier was endogenous ketones, when you create your own ketones. "Endogenous" means internal, inside. And DARPA's research looked at exogenous ketones, meaning external ketones. So, for example, like Ketone-IQ where ketone bodies that you can directly drink to increase your blood ketone levels.

And for the first time ever because of exogenous ketones, we are able to have a dual fuel system where you can have glucose in your body, but at the same time also have ketones in your body. And that's why a lot of athletes nowadays, including Tour de France athletes, our CEO just recently was on Lance Armstrong's podcast and talked about how all these cyclists use ketone-IQ to dual fuel themselves.

And from that DARPA research years later we came up with ketone monoester, which is a molecule where it's BHB bound with butanediol in an ester form. That's why they call it ketone ester. And we were, HVMN was the first company that launched ketone ester into the market in 2017.

The problem with ketone ester is that it doesn't taste the best. It tastes very bitter. It also costs quite a lot, it's what, $30, $40 per 25 grams, and only the premium top athletes who have sponsorships can afford that. And as of early last year, we came up with Ketone-IQ which is a chirally pure butanediol.

So, if you think about ketone monoesters, half of it's butanediol. And then over time we also see a lot of other ketone esters that came into the market like C6 bound with butanediol, acetoacetate bound with butanediol.

We saw the common trend here is the butanediol. What is butanediol? Is a molecule that goes into your liver, gets converted directly into BHB. It's like a slow release.

And on top of that you get the gate keeping effect of your liver because your liver gets signaled from the rest of your body. So, if you have enough energy, the liver would release it a little bit slower, so your ketone levels won't jack up too high. We can talk about that.

So, ketone ester, what they found is that while some studies showed improvement in performance, some studies showed neutral, no effect, and one or two studies showed detrimental effect.

The detrimental effect mainly is due to GI issues because of how bad it tastes and people are having nausea and all that. But on top of that, a study also showed the increase in respiratory stress biomarkers, heart rate and breathing rate. Because what happens is ketone ester spikes your blood ketone levels very high, between 3 to 5 millimolar.

And for those who don't know, if you're not on keto diet and you're not on ketosis, your blood ketone levels should be between 0 and 0.1. But if you're on keto diet, it can go up to 0.5. Above 0.5 is what we call nutritional ketosis. And then it goes further up from there.

So, when it first came up, we thought, "Well, ketones is great, so more is better, right?"

SHAWN STEVENSON: Yeah.

DR. LATT MANSOR: No, we were wrong because once again, metabolism is not a straight line. More is not necessarily better. Because we want to be in that Goldilocks zone, we want to be in that optimal zone. And that works for everything in our bodies, our enzymes, our hormones, you have to be in the optimal pH, optimal temperature, optimal everything.

SHAWN STEVENSON: Yeah.

DR. LATT MANSOR: So, ketone ester spikes up too much. Spikes your blood ketones too much and therefore creates an environment where your blood is too acidic. Because beta-hydroxybutyrate acid is an acid and especially when you work out, you are also producing lactic acid. So, they are...

These athletes are increasing the heart rate and breathing rate to expel the carbon dioxide, to neutralize the blood. That's why we switch over to Ketone-IQ as well, because through your liver, we know in our internal study, even when we use higher dose, it caps at about 2.5 millimolar. It doesn't go higher than that.

So, in a way, you're safe. You won't get to that point where you're just feeling ill, or you are getting too much blood acidification.

SHAWN STEVENSON: See, this is the American way, is like more is better.

DR. LATT MANSOR: Yes.

SHAWN STEVENSON: Right? Even with something like testosterone, if it can get to a place where it's too high. If you're just walking around, your beard has a beard, you got your eyes growing hair, and you can't even put pants on because you got the... You know?

DR. LATT MANSOR: It's so true.

SHAWN STEVENSON: It's like... It's we can go too far with everything. And so really dialing in that spot in our body where things are at that optimal level where you just feel good, you feel dialed in. That's what I really found from Ketone-IQ is that it puts you into that state.

And by the way, what's so remarkable about this is that, and you started off by saying this, your heart, your brain using this as a preferential fuel.

Because for me, my first question immediately when I found out about this was, well, what if glucose is available? Is your body going to preferentially switch over and use these ketones? Does it value it that much?

DR. LATT MANSOR: Yeah. Yeah. And the heart, they showed it because they measured venous... Arterial blood, blood going in, and venous blood, blood going out. And through that they can measure how much glucose going in and how much glucose going out. You can measure how much glucose is being taken up by the heart.

Same thing with ketones. What they have seen is that the heart will continuously take up ketones and also other substrates. But the other substrates, if you increase the dose, you will eventually come to a plateau.

Part of the reason could be because the transporters for the other substrates such as glute, so glucose transporters, or fatty acid transporters like CD36 could be fully saturated and therefore can't bring in anymore, but ketones will continue to go up.

Now I can't fully say that just because by nature ketones is like that, because it could be that the amount or the dose of ketones in the blood at that point is way lower compared to glucose. It could be that. But we do know that regardless or independent of other substrate uptakes, ketones does go up.

SHAWN STEVENSON: Can we talk about ketones in the context of athletic performance?

DR. LATT MANSOR: Sure. As I said earlier, a lot of athletes started using ketones, right? And we are sort of providing a physiological state where you have access to both glucose and ketones. And we are never meant to replace the current gold standard or nutritional strategy that athletes are using. You can still have your glucose.

And one of the most common questions as well is, "Do I have to be on a keto diet to drink Ketone-IQ?" The answer is no. Because especially if you are using it for performance, you are now fueling your body with both ketones and glucose.

And from studies that looked at performance, we do know that to a certain extent it does have glycogen sparing effect. So, think about glycogen as your glucose stores. When you go for a run, when you exercise, you will use up glucose first and then you will tap into your glycogen stores.

But when ketones are present, glycogen stores depletion actually slows down. So it could be that it's sending signal to slow down the glycogen sparing, but it could also directly provide energy to compensate for the usage of glucose.

The second way of looking at it is from a recovery point of view. So there have been studies that showed glycogen resynthesis. There's a separate study that showed mTOR activation, leucine-mediated mTOR activation.

So, this is very important for protein synthesis. After exercise they were given protein, especially leucine containing protein, carbs, and ketones. And they look at muscle biopsy and they looked at the muscles, specifically site-specific increasing leucine-mediated mTOR activation. So that's very powerful.

And then there's a full study by Hespel's group in Belgium that looked at cyclists who trained in a Tour de France style, where they have multiple intervals when they train and they have one or two training sessions per day, they were given ketones, carbs, and protein.

Again, half an hour after training, half an hour before bed. Three weeks later, they increase their work output by 15%. That was also corresponding with the increased intake of calories.

SHAWN STEVENSON: Fascinating. This is so fascinating. So, I think, and even previously a lot of the science around sports performance, because all of us, even when I say "sports performance" it's really life performance in many ways. But we...

DR. LATT MANSOR: I like that.

SHAWN STEVENSON: We might realize how ketones can help to fuel aerobic activities, but now we have some science indicating how the anaerobic pathways can be benefited as well.

DR. LATT MANSOR: Yeah. This is super interesting, right? Well first of all, let me address what you said about life. Life performance, right? I really like that. Because as before we started rolling and recording, I was just explaining that the way I describe ketone use cases is now anything or any activities that use your brain, you will benefit from Ketone-IQ.

So, in that sense, life in general, you use your brain at all times, even when you're not conscious about it, right? So, you will eventually benefit from it.

So, when it comes to anaerobic, a lot of people... Or me included, right? I still believe that glucose is still king when it comes to anaerobic because you get that fast energy. Glycolysis is oxygen independent. So, when you tap into the glycolysis pathway, you are creating ATP or energy without having to have oxygen.

So that's very important when you go for a very fast, intense anaerobic exercise. And whenever you talk about ketones, we know that ketones, if you talk about endogenous, it comes from fats, right? When it comes from fats, it's usually being associated with endurance exercise and aerobic exercise.

And that is also why the top, the pioneers who started using exogenous ketones were also the endurance athletes, the cyclists, the triathletes, and the long marathoners.

But recently we just completed a study with University of North Georgia, one of the top military universities in the US that we looked at anaerobic exercise and exogenous ketones for

the first time ever. And we combined Ketone-IQ and glucose for these participants who were put on a 5K run and then right after that, they were put on an a Wingate anaerobic test.

Which means they have to go through five bouts of sprints on a bike at 7.5% of their body weight as resistance and they sprint for 10 seconds, and they rest for 30 seconds.

And the results we saw was really, really surprising because we saw an increase in peak power, increase in average power, increase in velocity, and decrease in fatigue index as we measure the power on the way to the last bout. Obviously, you go through fatigue, and you go down further. And we have seen that people who are on Ketone-IQ, they perform better, but they also feel fatigue less.

So, one of the hypotheses that the researchers found or the researchers speculate is it could have an effect on the brain in terms of analgesia, sort of numbing the pain. Because anaerobic tests is designed to create a localized pain with lactic acid buildup and all of that.

But if your brain perceives it to be less painful, maybe then you can push further and harder and also feel less tired overall. But remains to be seen, I think that should be the next step. Whoever researcher, whoever scientist who's listening to this, this could be a next experiment.

And again, for full transparency, yes, HVMN paid for this study, but I have nothing to do with data collection, data interpretation, nor the publication. So, it's all fully independent by the university researchers. I did not tell them, "Hey, give me positive results only." It was all through them. And it was Dr. Parker Hyde who's the PI on this and Dr. Andrew Jakiel. So just full transparency.

Even though... And as we were talking earlier, yes, all these companies can sponsor all these studies, and at the end of the day, it's a matter of how you declare and how you interpret the studies.

And I truly encourage anyone who's reading research papers, go down to the protocol, like read the details.

SHAWN STEVENSON: Yeah, yeah.

DR. LATT MANSOR: Whether or not it's being sponsored, like there are going to be studies which are sponsored by industry that are fully, fully credible, right? That are fully unbiased. There are scientists out there who are good enough to have that full scientific integrity, regardless of how much they're being paid.

SHAWN STEVENSON: This is, again, what sets apart what you're doing. And this is the definition of putting one's money where their mouth is by funding studies. Because as we talked about before we got going with the show, most of university research done today is funded by pharmaceutical companies.

And yes, there can be valid science there, but there can also be a vested interest with the primary goal of making money. And also creating a framing where this is the way, right? "Our products are the products." Because they have a hold on the marketing, they have a hold on public perception, all the things.

And so, you know, just looking at this one angle with, you know, and by the way, for folks there's the aerobic exercise, which we generally think of like doing "cardio". And anaerobic is like explosive things, sprinting, powerlifting, moving things quickly.

And I put this to the test today even, you know, when what I've been doing is... Because previously when I was experimenting with this, I was looking more through the lens of cognitive performance. And I'm already somebody that's high performing or pretty dialed in and also sensitive to how their body feels. Certain contexts, you might not notice a difference.

I noticed the biggest difference when it comes to training. You know? So, I put it to the test in doing a combination of aerobic and anaerobic training, right? So doing some strength training stuff along with some cardio stuff. I've never felt so energized. I mean, I don't even like to use that word because like...

DR. LATT MANSOR: 'Cause you think of caffeine, you think of stimulant.

SHAWN STEVENSON: Exactly. And it's just like, it's a sustainable feeling of good. Like this thing that normally would deplete me is not depleting me. And I'm able to keep going and to keep performing. And just like, I'm just going to say it, like literally, I just went to the bathroom before we got started. I danced down the hallway.

And I don't know if it's because... You know, I don't know what it is. But just like even doing a tough workout before coming to the studio. You know, I'm going to, of course yeah, I'm going to have some BDNF production. I'm going to have different things. I'm going to have some different hormones getting produced, some endorphins, all that the good stuff.

But there's a sustainable energy that I have not experienced before. And I think it's just so cool that you guys have dialed in something so remarkable. And also again, based on science, based on just the evolution of our species, like this is a fuel that we are designed to have.

And now here's the other thing I want to ask you about is the sourcing, using a fermentation process for this, right? It's so cool to even think about or looking into that spectrum of science and sourcing to create something like this.

DR. LATT MANSOR: Yeah. Before that, I want to really address what you just said about your experience. So sometimes you and I know, like in this area, in this podcast field and this content creation around science, people sometimes go to the other extreme.

They get so bogged down on what's the data, who's sponsoring the study. We can pay for our studies all we want. But now this is the time when anecdotal example and use cases that real people like yourself.

And we all know, like Shawn was just saying, like he gets sent stuff all the time and he tries, you try all the stuff all the time. For you to be so passionate about this, and I know that people would know your credibility because people know your trustworthiness. If you know that it's not right, you will say... Like you don't, you don't give a s**t. Yeah, you'll say it.

So, for you to really stand by how you feel, I really feel gratified in what I do as a research leader of Ketone-IQ and HVMN, because now I'm truly touching the lives of people.

I think one of the greatest thing coming out from academia, coming out from just being a researcher or a scientist, is to have direct touch or impact other people's lives.

SHAWN STEVENSON: Yeah.

DR. LATT MANSOR: So, thank you for that. And your question about the fermentation and how how cool it is. I think this is super cool. But then recently we also dug up... 'Cause a lot of times, you know, throughout the year and a half that we've launched Ketone-IQ, there have been a lot of questions. Right?

"Is this safe for me? Is this going to affect my liver because my liver is converting into BHP?" I'm like, your liver detox way worse things than just converting butanol to BHP.

SHAWN STEVENSON: Oh my gosh. Yeah.

DR. LATT MANSOR: So, this is nothing. It's 70 calories worth of butanol. It's nothing.

SHAWN STEVENSON: The liver, will just sidebar, our liver is responsible for drug metabolism, for alcohol metabolism, for just anything that we're exposed to our liver is there trying to process and break down. So yeah.

DR. LATT MANSOR: Yeah, exactly. So, Ibuprofen can increase your liver enzyme. So no, it does not affect it badly. I've taken it for the past year and a half. My enzymes were in optimal zone. So, I'm happy with that.

This molecule, butanol, actually have been around since the '60s. People have been looking at it in animals, in humans as well. In the '70s, they looked at metabolism of it. They looked at the toxicity. It was completely safe.

And you know, something very, very interesting, I found a paper that was unclassified now. In 1965, they actually experimented with butanediol as energy source for astronauts for space exploration. And independent of that, recently, a person reached out to me from LinkedIn. He used to work for the European Space Agency. And he's like he used Ketone-IQ for his bike rides, but now he sees it's like this could be good for astronauts.

So, we actually apply for a grant for European Space Agency to experiment for space exploration. So that's like a little side note, little interesting trivia. But so, it has been around for a long time, for decades, but people haven't really looked into R butanediol.

So, because all these studies were done in racemic, so in racemic you get two sort of position of the molecule, one is R and one is S. So, when you have R and S butanediol, it doesn't raise your blood ketone levels that high, your RBHB that high. But as of our launch of Ketone-IQ, we are able to really distill it out and create the chirally pure R butanediol and now we are seeing an absolute significant increase in blood ketone levels.

So that's the novelty of our technology and human advancement in general, I think technology that allow us to just improve on what we already know. It's not a novel idea. And as we were talking about, like ketone is not something novel. It's not a magic molecule that just got discovered recently, it is a molecule that our bodies will use and recognize for eons.

And if you drink ketone versus you produce your own ketones, ketone is ketone, it's the same exact molecule. Your body will recognize it the same. It will, the same transporters will pull it in the same way as if you produce it your own.

SHAWN STEVENSON: Yeah. And even with this anecdotal, even what I'm sharing, if you stretch this out, you guys also have a contract with the Department of Defense. This stuff has been studied for quite some time, like you mentioned, going back to NASA, and now it's really being able to get people educated about this fuel source.

DR. LATT MANSOR: Because even with athletic performance, we tend to think about, I know with endurance it's going to be like these gels and a lot of glucose, like things that you got to keep on throwing in the system because they're very fast burning. Right? And this is a different fuel source.

SHAWN STEVENSON: One of the things that's interesting about your body utilizing ketones is the satiety factor that takes place as well. So, there's like this appetite regulation piece.

And if you could, could you talk about the influence potentially that this might even have on our blood glucose?

DR. LATT MANSOR: Yeah. So, there are a couple of studies that have been published already by University of British Columbia, by Dr. Jonathan Little. And across the board, whenever you take exogenous ketones, including Ketone-IQ, an hour later you will see your blood glucose drop and sometimes it drops down to like 70, which is quite low, but you don't feel the hypoglycemic feel when you feel unwell, you actually feel energized because your body is using the ketones instead of glucose.

One of the hypotheses that Dr. Jonathan Little proposed is that when you have ketones, it sends signal to the liver to reduce production of glucose via gluconeogenesis. Because our body constantly churns out glucose via gluconeogenesis, whether or not we are eating glucose.

That's why even when you're fasting, you'll still have a baseline glucose. That's how important glucose is. That's why I always tell people HVMN is not anti-glucose. We are not a ketogenic diet company. We are a metabolism health, metabolic health company that we really push for optimizing the human experience, essentially.

And it's funny you say this because recently, last week I interviewed Dr. Casey Means on HVMN podcast, and during the interview we did a little feature where I was wearing the levels continuous glucose monitor, and she just showed how to put it on, but then she measured her blood glucose level as well as her blood ketone levels via finger prick.

So, after one hour, so we had ketones shot before the podcast, an hour later we measured our glucose. And so, my glucose went down nine points from 89 to 80 because I was already fasting. And then her glucose went out even more than that, and she was so shocked that her ketone level went from 0.2 to 1.4.

SHAWN STEVENSON: Wow.

DR. LATT MANSOR: Yeah. So...

SHAWN STEVENSON: Just that time span.

DR. LATT MANSOR: Just that time span. So, it works, and she will be able to feel the difference as well. Like we were talking earlier, the best part of Ketone-IQ is obviously not the taste, but it is the subjective feedback, the subjective effect on your body. You will feel the mental clarity.

And I tell a lot of people, don't expect, when you talk about energy, when you talk about, as we were talking about earlier, don't expect the stimulant kind of feeling, don't expect like caffeine kind of effect, because that means you're feeling jittery, you're feeling like you need to bench 300 pounds.

It's a very subtle and calm energy feel. It's, if you do meditation, have you ever tried that? Take ketones and then meditate. You feel your mind really, I really like that feeling. It's like my brain just expands into this quietness, but also very focused sort of area.

Some people use it for meditation, some people, I've used it before breathwork, I used it before bed. That's anecdotal. We've tested the sleeps data based on the UNG data, we didn't see any significant difference in improvement or detriment.

But I personally, and I know a lot of anecdotally customers, they use it before bed, and they found their sleep quality increase. Some people they couldn't sleep with it. So, I would say try out because you know your body best.

SHAWN STEVENSON: And that's the thing is, it's going to be personalized. For some folks utilizing this, they're going to feel that sustained energy. For me, it was more what I noticed is a lack of drop of energy. That would be the best way to frame it for me personally.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: And just somebody who's spent time paying attention to my body, paying attention to my system. For some people they might not experience that, and that's okay. For the majority of folks who are utilizing Ketone-IQ, they're going to notice that things are working better in some form or fashion.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: And so, by the way, when you mentioned even with the taste, Ketone-IQ is, tastes significantly better than the old school ketone esters out there.

DR. LATT MANSOR: Yes.

SHAWN STEVENSON: And also, a little great tactic here is making sure that it's cold, like keeping it in the fridge. Because when I first had it and it was just fresh off the shelf, I was like, "Oh, this is going to be a tough buy-in." Then just by refrigerating it seriously, it made a significant difference.

And some things you got to pay to play, but truly if you look at how far things have come and even with the palatability of this and what you get from is really remarkable.

And by the way, so folks are like, "Where can I get this?" Go to hvmn.com/model and you're going to get 30% off your first subscription order. Alright. Which is really cool. They just hooked us all up with this. 30% off your first subscription order, hvmn.com/model. Go there now. Try this out. Pay attention to how you feel. Use it in different contexts.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: Again, as a pre-workout, I had about 30 minutes before I worked out. You can do this if you know you've got a big mental load that you're about to dive into creativity, you've got some things on your... But I said it earlier, life performance. Use it in different contexts and pay attention, because I really think that you're going to notice a significant difference.

DR. LATT MANSOR: Presentations, interviews, exams.

SHAWN STEVENSON: Podcasts.

DR. LATT MANSOR: Podcasts, workout, runs, intensive anaerobic power lifts. Anything that uses your brain, go try it.

SHAWN STEVENSON: Let's dive in and talk more about ketones in the context of brain health. Alright, and also just cognitive function overall. I know we've got some sound data, for example with MCTs, but this is a different level of it.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: Let's talk about that.

DR. LATT MANSOR: So first of all, let's address MCT. MCT is a great, it's medium chain triglycerides, is a great form of fats that we can take and it has high ketogenic effect, meaning that these fats will be converted into ketones into PHP again, in a very efficient manner.

However, the studies show that MCT can only get you above 0.5 millimolar, so not too high. So, if you want to get into that performance level from, so far from the studies, I would say above 1 millimolar is the therapeutic ketosis of good for therapeutic metabolic health in general and the mental dial-in.

And above 2, between 1.5 to 2.5 would be for performance. That's the aim to get into. And while MCT have been shown to be really helpful with neurodegenerative diseases, so did exhaustion ketones.

So, there's a study by Mujica-Parodi, they measured functional MRI, they looked at brain network stability as we age. So, as we age, our network stability will decrease. And the way they define brain network stability is the interaction between the different brain regions. Because as you know, we have different regions in the brain that is, that do different things, and the interaction between these brain regions is what they term it as brain network stability.

They put the participants on ketogenic diet for a week. And then there's another group also, they're not on ketogenic diet, but they only took one shot of ketone ester. 'Cause it was quite early on and we haven't even had Ketone-IQ yet then.

Both those groups, they had no difference. But compared to placebo, both of their functional MRI showed increased brain network stability. So, they showed increase in the interaction between brain regions.

And then if we dive even deeper into traumatic brain injury and concussion, we know there is some form of energy deficit in those cases. So, within 48 hours of a concussion or traumatic brain injury, they have observed an increase in glucose metabolism. The brain upregulates glucose metabolism and really creates energy.

Some people think that it may, because it may due to the demand of energy to cope with the damage. Some people think that it's being shoved into the pentose phosphate pathway and create more NADPH to mitigate the damage. We don't know for sure. But we do know that there is an energy demand increase.

And then after that they saw a high pole metabolism of glucose. So, it sort of balances out and then it lowers the glucose metabolism. So, there is again, the energy deficit. And for people

who do not have ketones in their bodies, these people upregulate lactate metabolism. So, they're using a different source of fuel now, apart from glucose.

And then a lot of people are like, "Why can't you use fat?" So, this is the beauty of it. So, I didn't talk about it earlier, why our bodies create ketones from fat when we are starving. It's because fat cannot bypass the blood brain barrier. Fat molecules are too big to bypass the barrier and therefore it needs to be converted into ketones with just smaller molecule to bypass. That's why our bodies prefer, our brains prefer ketones.

So, what I hypothesize is that if these people are given ketones at the moment of them getting concussion or brain injury, it may help with that energy demand to really mitigate the damage. And then over time, providing the ketones may also really close that gap of energy deficit and therefore decreasing the risk of them developing neurodegenerative diseases later on.

And a lot of people with concussion and TBI, they actually report a lot of times they encounter, or they experience brain fog. And for those who actually tried Ketone-IQ, and these are customers who just write to us directly, we don't know them, and they literally just buy it from us.

We didn't pay them to say this, but they actually said, "Oh, I've had a concussion and I've always had brain fog and thanks to your product, that I can function properly, I can be more productive, I can focus, I can be more functional."

And that is some of the most gratifying feelings that you could get working for a company like this and hearing what people feel after they take your product. I think right now...

We have two hospitals as well, by the way, two hospitals in Perth, Australia, they have the protocol approved to use Ketone-IQ for a multicenter TBI study. And again, we are not sponsoring this study, by the way. They are actually buying from us to run these studies. So we have no skin with them. It's all up to them how they run it and all of that.

They're using this as one of the interventions because they did their research on exogenous ketones, what's the most economical, the most efficient, taste-wise, all of that. And they decided Ketone-IQ is the choice.

SHAWN STEVENSON: Oh my goodness.

DR. LATT MANSOR: And then us as well, we are collaborating with the Naval Health Research Center and just submitted a grant to CDMRP for TBI in the military as well. So fingers crossed, we'll find out early next year.

SHAWN STEVENSON: I was just thinking about the implications here for like NFL players, for example. Post-game, right? And this is a place where CTE and concussions and all these different things, these are just run of the mill, regular. You know what I mean? And what if there was a way to effectively nourish and insulate the brain, potentially speed recovery.

But one of the underlying mechanisms as you just shared, we've got this brain network stability. We've got this whole brain integration. Because our brains and our bodies know what to do. Right? And oftentimes it's getting out of the way of the process, or helping to create conditions where the process can happen more gracefully.

And so by utilizing this fuel source, helping our brains to be able to do that job of healing and regeneration that is innate within us, right? And also thank you for mentioning the fact of these gates, the gates that are shuttling fuel to the brain. The brain is very hungry. It's a very hungry organ.

And even though it's just about 2% of our body's mass, it's consuming 25% to 30% of the calories we consume. And a lot of that glucose preferentially is just getting shut. Your brain will gladly consume upwards of maybe 50% of the glucose from any given meal because it's running so many processes.

Your brain is like, it's an entire universe. Michio Kaku said it's the most complicated object in the known universe, right? Which is a pretty remarkable statement.

And so understanding that that fuel source, again, but it's a very quick burning, like lightning in a bottle type thing versus something more sustainable in a bottle, where we even see this, and this gets me thinking about another question, which is in the context of something like epilepsy, right?

Where we know that a ketogenic protocol is one of the most effective time-tested treatments for folks that are experiencing this. And essentially those glucose driven pathways just creating fireworks in the brain could also lead towards having a seizure in some aspects.

And this is helping to lower that activity in a sense, that kind of explosive energy, calm the brain, provide an alternative fuel source that's not as inflammatory. By the way, I think that's the key word to say here.

So let's talk a little bit about that.

DR. LATT MANSOR: Yeah. So I'm so glad you brought up epilepsy. And this is a, a prime example of how exogenous ketone is not the miracle drug. It's not the super drug that we think it is. It does a lot of things.

But when you have conditions like epilepsy, for example, it's over excitation of the brain and it's mainly caused by glucose consumption, you may need the ketogenic diet instead of exogenous ketone, just for the lowering of glucose and lowering of insulin and all those pathways, rather than temporarily increase ketone levels.

Don't get me wrong, the ketone levels will still help when it comes to anti-inflammatory and also relaxation in terms of GABA pathway. But the lowering of glucose may also play a big part in it.

And I spoke to Dr. Chris Palmer as well. In terms of mental health and the metabolic disorder of the brain, there are certain diseases that you need to have an overhaul of nutrition, where ketogenic diet may be more useful.

Now, if you're talking about brain injury, since it's also gobbling up all this glucose, you know that the glucose is not the problem. The energy deficit may be the problem. So that's where it comes in.

So ketones, as you said, has been shown to decrease inflammation via NLRP3, which is an inflammasome, and that is a powerful tool. But another thing I wanted to point out is that I see ketones as an adaptive fuel, because there was one study which people ran with it. One study came out, they're like, "Oh ketones increase inflammation when it's put in a test tube with bacteria toxin in it, so it drives up inflammation."

The way I see it, ketones adapt to whatever your body needs, adapt to whatever stimulus you give it. So for example, in this example, you already having chronic inflammation in all these neurodegenerative diseases, it's shown to lower those. But if you just isolate it and put in a bacterial toxin, it increases inflammation because that's what your body should do if you have an invasion.

Same thing, it should suppress appetite when you're not doing anything. When you're just taking it for podcasts. I'm still fasting now, what time is it, like 02:00, 03:00? So I haven't eaten anything and I don't feel hungry. It's suppress appetite.

But in the study for recovery where they increased 15% work output, they saw an increase in calorie intake. How does that work, right? So increase in mTOR activation, like I said earlier, when you exercise and you give proteins, it increases leucine mediated mTOR activation. But

in longevity studies where they have decreased calories, they have increased ketones, you see a decrease in mTOR activation.

So again, it's all very much a interweb and optimal level of what you are trying to achieve. I think that's why going into the different protocols and different way people run these studies are so important for us to really figure out what the truth is. And as we were saying earlier, whatever activity that your brain uses.

But a very interesting conversation came up last week when I was interviewed by Dr. Mindy Pelz, that not only does it fuel whatever activities that use your brain, but if you think about why is it your brain and your heart preferentially use ketones, it's that because these organs are energetically very demanding. They need a lot of energy.

And then she was like, "Oh, what about ovaries for women's health? Ovaries are one of the most like energy demanding organs, and this could potentially help with fertility problems." I was like, "I didn't even think about that 'cause I'm not an expert in that area." And now Dr. Mindy Pelz, she's like, "I'm going to try it now."

And it's super interesting. It's like, whatever, whenever your body needs that extra energy, whether it's for performance or for recovery, or for mitigation of damage, or for correction of energy deficit base damage, ketones could potentially help.

SHAWN STEVENSON: Wow. Yeah.

DR. LATT MANSOR: Which is super powerful.

SHAWN STEVENSON: I love this because you've got so many different practitioners who are experimenting with this with their patients as well, even in this context of reproductive health, for example. And it's a really cool time to be alive.

And I'm interested to see, with my increased ability to engage in workload, like the impact it's going to have on my body composition, like I'm really interested to see this played out. But it's exciting because I haven't had anything recently that I have that notable ability for work output.

DR. LATT MANSOR: Yeah.

SHAWN STEVENSON: And obviously again, I can compete at a pretty high level, there's a lot that I could do, but I'm human so I would notice like the depletion, I'd notice that point where,

"Okay, this is a... " I could see the energy dip to where like, "Okay, it's time to shift to recovery." And it's just like, man, today was really exciting.

And I'm not kidding. Like when I left here to go to the bathroom, I'm dancing, dancing down the hallway, like Kevin Bacon or some shit in Footloose like, and I'm just like, "Shawn, chill. What are you doing?" I'm looking like, "Is anybody seeing me?"

But I'm not just going to fully, it's also part of this, is the conversation piece as well and the great people I'm around that has me on 10, of course, but man, like just the fact that I utilize ketone-IQ today, it's just like, "Huh, that's really interesting."

So I want to circle back, because again, I don't think that it's common knowledge about how the heart plays into this in the utilization of ketones. And it makes complete sense for me because if we think about the human heart, and there's also, it's been dubbed to contain effectively what is known as a "heart brain".

There are a tremendous amount of neurotransmitters and receptor sites, like things that we would attribute towards brain function in the human heart. And it's also also very broad electromagnetic, just similar with the brain. There's just a lot of energy production and a lot of electricity, right?

Where you have these different things in hospital settings, for example, to monitor like this electric energy that the heart is giving off and the a brain is giving off.

And with that being said, for it to have this intelligence to utilize this fuel source, let's talk about heart health, in the context of ketones, heart health, cardiovascular health. Because the reason I'm asking this is that this is the still today the number one cause of disease and dysfunction in our, in our world today is heart disease is the number one cause of death. Let's put it like that.

In the United States, it's the king of mortality, right? Where people are dying prematurely from heart disease. Let's talk about ketones in this context.

DR. LATT MANSOR: I am so glad you brought that up because now this is my area of passion. 'Cause my late father passed away from stroke. He had a heart attack a few years before that, and he had a open heart surgery. And that was, I was 17 then.

And the company that I joined after my master's program was the medicines company and they focused on cardiovascular disease and critical care pathways. And my PhD was in

Cardiovascular Disease and Diabetes so I looked at metabolism of Type 2 diabetic heart in hypoxia, which is low oxygen.

So I definitely have a lot of personal vested interest in this area because I'm also looking at for myself, knowing that I may have increased risks of developing heart disease and also all the other chronic diseases associated with it. And that's also what drove me to live healthier and eat healthier and all of this stuff.

So from the context of ketones, we know that in humans, a failing heart upregulates ketone consumption and uptake naturally, just naturally with or without having ketones in the body, when you, even when these people are not drinking exogenous ketone or Ketone-IQ, we see an uptake of ketones into the heart.

SHAWN STEVENSON: It's fascinating.

DR. LATT MANSOR: Which is fascinating.

SHAWN STEVENSON: Yeah.

DR. LATT MANSOR: And in 1995, Sato published a paper that showed the heart metabolized ketones more efficiently compared to glucose per molecule of oxygen used. So efficient fuel we're talking about, right?

And this study in, from Netherlands, published a couple of years ago, looked at animal models, both mice and rats. They combined two different studies from two different sites. One in the US, one in Netherlands. They looked at the failing heart and also an artificial heart attack that they created in these animals. And they, these animals were given ketones.

What they have seen is that one, it mitigates the damage from the heart attack, but most importantly, after someone has a heart attack, most often than not, they'll go through a cardiomyopathy or cardio hypertrophy where your heart will enlarge. Because of the damage area your heart is not functioning as well so it compensates it by growing bigger so that it can pump enough blood through the body.

The hypertrophy was also mitigated when ketones are present.

SHAWN STEVENSON: Interesting.

DR. LATT MANSOR: And these are only in animals. Currently, the same university, I'm actually talking to their researcher, they already started a study using ketone-IQ for humans. So I can't wait for the results to come out, can't wait for the published paper to come out.

Again, we didn't sponsor this study. This was independent, fully on the researcher, on the University of Aarhus, I think. It was Denmark. That one was Netherlands and then this one was Denmark.

And yeah, they decided to use Ketone-IQ and all I did was help them understand keto metabolism, help them understand the dosing when it comes to humans, and off they go.

SHAWN STEVENSON: Amazing.

DR. LATT MANSOR: So fingers crossed, we'll find some really interesting results. Because ultimately what I want is not just, "Oh, I'm working for HVMN and I'm selling product." It's my passion in solving chronic diseases and diabetes. 'Cause my mom's side, obesity and diabetes. My dad's side heart attack.

So if we can solve this problem, as you said, like number one killer in the world, with just food product and not a pharmaceutical, think about how powerful that will be. Then again, I might get removed from pharmaceutical companies at this point. [chuckle]

SHAWN STEVENSON: Right.

DR. LATT MANSOR: I might be taking money out of them.

SHAWN STEVENSON: Now, this really speaks to the different paradigms that we have today, simultaneously existing, where we have such a powerful pharmaceutical matrix or pharmaceutical industry that is largely controlling health narrative. There's so... Being the United States is one of the few places on planet Earth that allows marketing direct to consumers for drugs on television. Right? And also a lot of our media outlets are sponsored by pharmaceutical companies.

You're up against a really powerful giant in this context. And you just said it, a food product being able to help to mitigate damage from chronic illnesses, from traumatic injuries, and also helping to potentially provide the environment within the body for reversal of these conditions.

And one of the things that's most exciting for me is the portion where people can start to better manage their blood glucose. Because derangements with blood sugar, elevated blood

sugar in particular, is a primary component of the majority of the top 10 causes of death in the United States.

And it's again, having the opportunity to take back control of our own metabolism, having more agency. And thank you for mentioning this several times, this isn't like this miracle cure, but in some ways, in some people in these different contexts, it can be remarkable at the benefits that can be found from this.

And so it's really exciting time to be alive because it's really a ancient old brand new integration, right? Something that our bodies are designed to utilize. Utilizing... Plus utilizing our current science and also strategies to create this at scale. So it's so cool. And different, literally the potential for this to be used in outer space down to on the ground level, is super exciting.

And I want to ask you about this as well. So we've talked about the brain health aspect. We've talked about the heart health aspect, we talked about the sports performance aspect.

Is there anything else that people need to know that you guys have looked at as far as some health benefits that can be extracted from ketones?

DR. LATT MANSOR: Ooh. I think we covered quite a lot of grounds. As you said, the metabolic dysfunction that stems from the dysregulation of glucose is super big. Right? But I think ultimately when it comes to health, make sure the foundation is set.

SHAWN STEVENSON: Yes.

DR. LATT MANSOR: Right? Your physical activity, your nutrition. Because you will spend way more time out of your 24 hours doing those things. And this is just one shot. It can't correct everything.

And as you were nicely explaining how versus a pharmaceutical, this could be super, super significant and powerful to some people, especially if we are looking at it from a preventative point of view.

But from a curative point of view, we have yet to see the data. Obviously, I'm hopeful. But I think an ideal world would utilize both preventative and the curative effects of pharmaceuticals. We'll still need stents if somebody's arteries are clogged, for example. Medical devices, pacemakers.

There are a lot of things that ketones can't solve, but what it can do is hopefully help you and being a tool in driving your own life towards a healthier pattern.

Whether it's to suppress your appetite so that you have less calories per day, to providing you enough energy so that you can go and have a better, longer, more productive workout, to preparing you if you have high risk of having concussion or injury to your brain and have the energy ready to go to fix whatever damage that is to occur.

SHAWN STEVENSON: You've got a spectrum of elite athletes who are utilizing Ketone-IQ, top neuroscientists. The list goes on and on. And again, it's really remarkable. Thank you so much for sharing your wisdom. And also again, pointing us back to we've gotta make sure that we're taking care of the foundation. It's the most important thing.

Like if we start stacking conditions, because again, I'm a big proponent of us paying attention to results, right? This current model that we have in human health and so-called healthcare, things continue to get worse. We're not really doing very well. We're very good at masking symptoms. We're very good at...

Of course, if there is a traumatic incident to help to, like again, if somebody's arm is hanging off, don't give them turmeric. You know what I mean?

However, if we look at preventative approaches to things, utilizing our nutrition, exercise, all the things that our genes expect from us, this can help to supplant so much suffering and the need for treating symptoms with drugs.

And we can create a whole new paradigm, but it's going to take for us to really experiment, number one, this is why this is so important as well. Experiment. Find out what works for you because it's probably not going to be the same for the next person. Have the audacity to do that and continue to learn and get educated. Stay up to date with the information.

And so with that being said, where can people follow you and stay up to date with you as well?

DR. LATT MANSOR: They can follow me on @lattmansor, L-A-T-T M-A-N-S-O-R on all my social media. Or @hvmn as well. And they can also listen to our podcast, HVMN Podcast with Dr. Latt Mansor, I'm host. And I'm learning so much from you as well as a seasoned podcast host. And thank you so much for sharing your knowledge and thank you so much for having me here. It has been such an honor to be on The Model Health show.

And I'll say to people, like you said, everyone, everyone's body is unique. You are the PhD of your own body and therefore go experiment. Choose to take the step today. Because don't wait until it's too late. Don't wait until you're sick to do something about it.

Just because we're talking about metabolic health, we are talking about brain health, we're talking about cardiovascular disease, just because you're healthy today doesn't mean that it mean it does not pertain to you at all. Just having that knowledge and having that initiative at hand might come, might be useful later.

SHAWN STEVENSON: So good. Get a PhD on you, on your own health, your own body. Become the world leading expert on you. That's powerful.

DR. LATT MANSOR: Nobody will understand your body better than yourself.

SHAWN STEVENSON: You live there.

DR. LATT MANSOR: Including your doctors.

SHAWN STEVENSON: Right. That's you. You live in there.

DR. LATT MANSOR: Yeah. [chuckle]

SHAWN STEVENSON: So you gotta make sure that you're a good roommate.

So man, thank you so much again for coming to hang out with us. It's been amazing. And again, everybody head over to hvmn.com/model, 30% off your first subscription order, ketone-IQ, try it out. Experiment.

And again, PhD on you, on your health, your body. Sovereignty, agency, empowerment. That's what it's all about. Dr. Latt Mansor, everybody.

DR. LATT MANSOR: Thank you.

SHAWN STEVENSON: The science around ketosis and the use of ketones has been rapidly increasing in our world today. And for good reason. There's a substantial amount of data affirming the benefits on our heart health, our brain health, our overall metabolic health. But most importantly, as with anything, we really need to pay attention to us and our unique needs.

And so experimenting with things, absolutely, whether it's an intermittent fasting and fasting, whether it's a ketogenic protocol, whether it's the use of exogenous ketones, we can experiment with any and all of these things, but it really matters how we feel.

And paying attention to the most important biomarkers, which is how we look, how we feel, and how we perform. Paying attention to ourselves going within.

And one of the things that Latt shared with me is that what he's seen to be the most remarkable data points is for people who have sensitivity and awareness within their own bodies to notice like how different things make them feel.

Certain foods and certain supplements can take time. We reach a certain point of critical mass to where we notice like, "Oh my goodness, like this thing has really improved this aspect of my life," whatever that might be. Whether it's my memory, whether it's my performance at the gym or my performance in my sport. Whatever it is for us.

But something like Ketone-IQ, the change that you can notice happens relatively quickly, it can happen that same day. And that's what's really remarkable about it for me, because there are very few things that have been brought to the market that have that kind of rapid change. For a lot of people, not for everybody. And again, this is where it comes into you experimenting and finding out things for yourself.

This might be truly remarkable for you, this might be negligible. But most importantly, again, it's about experimentation and adding things in and finding a way to dial in the very best nutritional and lifestyle protocol for you where you are right now in your life.

So again, check out hvmn.com/model and they're going to hook you up with 30% off your first subscription order. And listen, we've got some incredible masterclasses coming your way and the most amazing world-class guests to help you to feel empowered and educated. So make sure to stay tuned.

Take care, have an amazing day, and I'll talk with you soon.

And for more after the show, make sure to head over to the modelhealthshow.com. That's where you can find all of the show notes. You can find transcriptions, videos for each episode. And if you've got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that the show is awesome. And I appreciate that so much.

And take care. I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.